Interpretive Guide for Student and Aggregate Reports

PreACT®

www.act.org/preact

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Contact Information

ACT Customer Care

ACT makes the following numbers available to test coordinators. These numbers are NOT to be given to examinees or parents.

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Introduction

This *Interpretive Guide* is designed to help you understand and effectively use the PreACT® Student Reports, Student Score Labels, Student List Report, Educator Reports, Early Intervention Rosters, and Item-Response Summary Report, all of which are provided as a standard service of the PreACT program. Please keep the following cautions in mind:

- The validity of conclusions about student groups depends, in part, on the accuracy of data reported by students at the time of testing (gender, race/ethnicity, coursework plans, and other personal information), which are not verified by ACT.
- Numerous social, economic, and instructional factors are known to contribute to educational achievement. Relatively few of these factors are represented in these reports. Conclusions about educational programs or policies at your school, based on student achievement, should be supported by information from additional sources.
- In making decisions or drawing conclusions based on differences among groups of students, caution must be employed when the number of students in any group is small. ACT urges caution when interpreting summary results for groups with an N-count of fewer than 25 students because of the instability associated with data from small samples. This is particularly important when the identity of group members can be easily determined and confidentiality is likely to be breached through release of data.
- When sharing PreACT results with others, identify the population represented by the report. For example, conclusions regarding your entire class are appropriate only if all, or nearly all, of your students participated in the program, or you have determined that those who took the test are representative of the class as a whole.
- The predicted ACT score ranges assume students taking PreACT are 10th graders who will take the ACT® test 12 to 18 months after taking the PreACT. The predicted ranges are estimates that are based on the typical achievement growth observed in students taking the ACT in grades 10 and 11. The predicted ranges will not necessarily hold for younger or older students taking the PreACT, or for students with more or less time between their PreACT and ACT tests.

An Overview of the PreACT Program

PreACT Tests

PreACT includes four multiple-choice subject tests—English, math, reading, and science—that last 30, 40, 30, and 30 minutes, respectively. PreACT also collects information about students' interests, needs, plans, high school course information, and selected background characteristics. A complete description of the PreACT tests and program components is provided in Appendix A of this *Interpretive Guide*.

PreACT Score Scale

For each of the four PreACT tests, the number of questions answered correctly is counted to obtain a raw score, which is then converted to a scale score. Scale scores for the four tests, STEM score, and the Composite score range from a low of 1 to a high of 35. Composite scores are calculated by rounding the unweighted average of the four subject test scale scores. STEM scores are calculated by rounding the unweighted average of the mathematics and science scale scores. PreACT scale scores can be compared directly to the ACT scale scores for each of the corresponding tests (e.g., PreACT English to ACT English).

PreACT National Norms

ACT conducted a study to estimate PreACT national norms based on a weighted sample from the PreACT operational test. The norms reported for PreACT scores are representative of examinees across the nation who take the ACT test. Visit **https://www.act.org/content/dam/act/unsecured/documents/R1673-preact-2017-norming-study-2017-12.pdf** for more information on the PreACT norming study.

Local comparisons to the national norm group are most appropriate when PreACT tests are administered under conditions similar to those in the norming study—with all four tests administered in a single session in the standard order, and examinees having calculators available for use on the Mathematics Test.

Student Information

The Student Information Section collects name, gender, birth date, current grade in school, race/ethnicity background, and student identification number. A needs assessment allows students to identify the amount of help they need in each of seven areas of academic and career development. The ACT Interest Inventory assesses students' preferences for work-related tasks. The High School Course Information section collects information about the core courses students have taken and plan to take.

Supplemental Items

A Supplemental Item section offers the option of administering up to twelve locally developed questions to collect student information of particular interest to your school or district. Student responses are summarized in the Educator Reports.

Student Planning Guide

Each student who participates in the PreACT program should receive a planning guide, *Using Your PreACT Results*, which includes an explanation of information provided on the Student Report. For more detailed information about the PreACT program and its role in the ACT College and Career Readiness System, please see Appendix A of this *Interpretive Guide*.

PreACT Reporting Package

Student Report

Two copies of each Student Report are provided. One copy should be distributed to the student, along with a copy of the student planning guide. The second copy can be retained for school use.

Student Score Labels

Student Score Labels are self-adhesive labels to be affixed to a student's permanent records. Two copies of each Student Score Label are provided.

Student List Report

A list of tested students shows test scores, educational plans, career preferences, and estimated ACT score ranges.

Educator Reports

Educator Reports provide tables that summarize the performance of your students who took PreACT. The Educator Reports are provided for each school testing at least one student in the scoring batch with a valid PreACT Composite score including those who tested with extended time (unless you tested under a contract or other special arrangement that specified these results not be included).

Early Intervention Rosters

The Early Intervention Rosters identify students who qualify under four categories. This information can help you to design intervention strategies to assist students to reach their academic and career goals.

Research Data File

This service provides complete PreACT data for every student tested in your school. Files are delivered on CD in both fixed-length and comma-separated text formats to provide flexibility for local use.

Item-Response Summary Report

This report provides tables describing the item-by-item performance of your PreACT examinees. Item-response results are categorized by subject test (e.g., Math) and by reporting category (e.g., Preparing for Higher Math).

Understanding Your PreACT Student Reports

Student identification information, needs, and plans and background information shown on the Student Report are collected on the PreACT answer folder using the booklet *Instructions for Completing Your Answer Folder*. Students who complete the PreACT assessment receive four subject test scores, a Composite score, and a STEM score. ACT reports a predicted ACT Composite Score Range as well as predicted ACT subject test and STEM score ranges. Note that predicted ACT subject score ranges can only be provided for the PreACT subject tests completed. If a student does not have a valid PreACT Composite Score or STEM score, a predicted ACT Composite Score Range or STEM score range cannot be determined. Data elements collected during PreACT administration (including test item responses) are included in the Research Data File.

Further information about PreACT test scores is available on the ACT website at **www.act.org/preact**. The planning guide, *Using Your PreACT Results*, also provides explanations and suggestions for using PreACT results. Because PreACT and the ACT® test use the same score scale, ACT College and Career Readiness Standards may be used to infer descriptions of the knowledge and skills associated with PreACT scores. The College and Career Readiness Standards are provided at **www.act.org/standard/**.

Understanding Your PreACT Student List Report

The PreACT Student List Report lists all tested students in alphabetical order by last name. For each student listed, the roster shows the student identification number, student-reported post–high school educational plans, student-reported preliminary career preferences, any reported special status codes and accommodation codes, and the student's composite score, subject scores and STEM score, as well as predicted ACT score ranges.

Understanding Your Educator Report

What is the frequency of the PreACT scores of our students?

This table provides your local mean, standard deviation, and distribution of the four subject test scores, the Composite scores, and STEM scores. You can compare your local results to national cumulative percents, means, and standard deviations to determine how your students performed relative to the national norms. The table also gives ranges of scores for students predicted to be on target to be college ready, for students falling below that range but still on the cusp of being on target, and for students falling in the range of in need for intervention. The college readiness ranges are based on typical achievement growth observed for 10th graders and the ranges will not necessarily apply to younger or older students taking the PreACT. Local cumulative percents are based on test scores available from the scoring batch, except those with invalid Composite scores.

Do our students' PreACT scores differ by ethnic and gender groups?

This table reports your local mean scores by gender and racial/ethnic background, as reported by students on their PreACT answer folders, as well as the percentage of students planning to take a college preparatory core curriculum. Keep in mind that summary results for groups with only a small number of students should be interpreted with caution because of the instability associated with data from small samples.

Do our students' PreACT scores differ by the courses they have taken or are currently taking?

This table summarizes students' self-reported coursework taken or currently taking and students' PreACT test scores. This page of the report also contains PreACT scores for students who are on track for taking the ACT-recommended college core coursework versus those who are not.

How do our students' PreACT Composite scores and coursework plans relate to educational plans?

This table summarizes students' self-reported educational plans after high school, their coursework plans, and their PreACT Composite scores. Results include the number (frequency) and percentage of your students who selected each educational level. The table also shows the percentage of students selecting each educational level who also reported plans to complete a college-preparatory core curriculum in high school, and their average PreACT Composite scores. While student plans may be preliminary, this table provides an overview of your students' aspirations and understanding of educational planning.

How do our students' PreACT Composite scores and coursework plans relate to their expressed needs for help?

This table summarizes your students' self-reported needs for assistance in seven academic and career areas. Percentages are based on the total number of students responding. The table also shows the percentage of students by need area who also reported plans to complete a college-preparatory core curriculum and their average PreACT Composite score.

How do our students' PreACT Composite scores, coursework plans, and educational plans relate to their career interests?

This table assigns each of your students to one of six ACT career clusters based on their responses to the ACT Interest Inventory. For each cluster the table shows (1) the percentage of your students who are planning to complete a college-preparatory core curriculum, (2) the percentage of your students selecting each of five educational plans, and (3) your students' average PreACT Composite score. For detailed information about the ACT Interest Inventory and ACT career clusters, see Appendix B of this *Interpretive Guide*.

How did our students respond to the local items?

This table is provided only if you indicated on your School Header that you administered locally developed supplemental items. Up to twelve items, each with up to five response options (A–E) can be studied.

Understanding Your Early Intervention Rosters

Early Intervention Rosters include lists of students from your school who qualify under four possible categories. The four rosters include the following:

Which of our students reported that they do not plan to finish high school or have no post–high school educational plans?

Students in this category are listed alphabetically by name with their PreACT scores, their coursework plans, and their educational plans.

Which of our students earned a PreACT Composite score of 16 or higher, but reported that they have no plans to attend college?

Students are listed alphabetically by name with their PreACT scores, their coursework plans, and their educational plans.

Which of our students reported that they plan to attend college, but earned a PreACT Composite score of 15 or lower, or do not plan to take college core coursework?

Students are listed alphabetically by name with their PreACT scores, their coursework plans, and their educational plans.

Which of our students expressed a need for help in one or more areas?

Students in this category are listed alphabetically by name with their PreACT scores and selected area(s) for which they indicated needing help.

Understanding Your Item-Response Summary Report

Your PreACT Item-Response Summary Report shows the number of your students who selected the correct response to each item, the number of your students who selected each incorrect response, and the number who did not answer the item. A test booklet is included with your reports to further assist you in identifying the specific knowledge or skills being tested.

The item-level information in this report can help you relate your students' overall performance on the PreACT tests to your local curriculum, including identifying consistent patterns of strength or weakness in your tested students' performance across areas of your curriculum measured by the test. If, for example, you find that your students perform consistently lower than expected in the Preparing for Higher Math reporting category, you can examine the text of the items in this reporting category to obtain specific examples of the skills or knowledge involved. In using the report, you should determine your students' academic strengths and weaknesses relative to the skills and knowledge measured by the test items, and address apparent weaknesses at the reporting category level.

Consider the following questions as you review your Item-Response Summary Report:

Does your report group represent your entire 10th-grade class or some portion of your 10th-grade class?

If your report group represents only a portion of your class, your results may not apply to your entire class.

What differences are there between your curriculum and the skills and knowledge covered by each PreACT reporting category?

Use the descriptions of the tests given in Appendix A to determine the skills and knowledge tested within each reporting category. Use the items themselves to identify more specific skills or knowledge required to answer correctly the items in each content area. Identify the skills and knowledge you emphasize in your curriculum, and determine the similarities and differences between your curriculum and the test contents. PreACT test items represent skills and knowledge from broader content domains. Focus on each domain of skills and knowledge, rather than the contents of specific items.

Given your curriculum, is the number of your report group answering each item correctly consistent with your expectations?

The correct response is indicated by an asterisk. Determine whether your students tended to respond correctly to items in a reporting category that you emphasize in your curriculum.

Is a large number of your report group choosing incorrect response options?

Incorrect options may represent common misconceptions related to the skill or knowledge measured by the

item. If your students did not perform as well as you expected on some items, the incorrect options can help you identify the source of errors being made.

Is a large number of your report group omitting responses to items?

If you have high omit rates at the end of the test, you may want to consider other factors, such as general test-taking skills, that can influence your students' performance. High omit rates near the beginning of the test or on difficult items may indicate that your students did not know the answers.

College and Career Readiness Standards

You just received the PreACT reports, and you may be wondering what the test results really mean. In other words, what do the test scores on PreACT tell you about what students are likely to know and to be able to do?

To help answer these questions, ACT provides information in the form of **ACT College and Career Readiness Standards**. The Standards, developed for the ACT, can also be used to describe the types of knowledge and skills typically demonstrated by students who score in particular score ranges on each test of PreACT. The comments about a student's academic achievement on the Student Report are based on these Standards.

What are College and Career Readiness Standards?

College Readiness Standards are sets of statements that represent widely held learning goals or expectations of what students have learned that are important for success in high school and beyond. The Standards show how students' skills can progress, becoming increasingly sophisticated from score range to score range. You may view the Standards at **www.act.org/standard**. The Standards address all four academic areas measured in PreACT: English, math, reading, and science. Standards are provided for six score ranges along the PreACT score scale (13–15, 16–19, 20–23, 24–27, 28–32, and 33–35).

If students in your school obtain a score between 1 and 12, they are most likely beginning to develop the knowledge and skills described in the 13–15 score range for that particular PreACT test.

Why are College and Career Readiness Standards needed?

The purpose of the Standards is to help high school counselors, classroom teachers, and administrators, as well as students and their parents, better understand how the scores relate to the kinds of skills needed for success in high school and beyond.

PreACT is a curriculum-based assessment, which means that it measures what students can do with what they have learned. PreACT is designed to measure students' development of knowledge and skills in the same four academic areas as the ACT. The knowledge and skills measured by these assessments differ in sophistication and complexity from grade 10 to grade 12. The Standards serve as a direct link between what students have learned and what is being taught in the classroom.

How should the College and Career Readiness Standards be interpreted and used?

The Standards provide a list of statements that describe what students are likely to know and to be able to do if they score in specific score ranges. The Standards are cumulative, which means that if students score, for example, in the 16–19 range on the English test, they are likely to demonstrate most or all of the skills and understandings in the 13–15 and 16–19 score ranges. Students can use the Standards to help select courses to take in high school based on the types of knowledge and skills they will need to develop to be prepared for the future.

Because no one test form measures all of the knowledge and skills included in any particular Standard, the Standards must be interpreted as knowledge and skills that most students who score in a particular score range are likely to be able to demonstrate. Since there were very few items in the lowest range that were answered correctly by 80% or more of the students, the Standards in this range should be interpreted cautiously. Students who obtain scale scores of 12 or below are in the process of developing the knowledge and skills described in the 13–15 score range, but they may not as yet be able to demonstrate consistent achievement of them.

It is important to remember that PreACT does not measure everything students have learned in middle school/junior high and high school, nor does any particular test form measure everything necessary for students to know to be successful in high school. PreACT includes a wide range of knowledge and skills that has been judged to be important for success in high school and beyond. College and Career Readiness Standards should be interpreted in a responsible way and be used together with other information about students' knowledge and skills to better understand what they will need to be successful in high school and beyond.

ACT College Readiness Benchmarks

The ACT College Readiness Benchmarks are scores on the ACT subject tests that represent the level of achievement required for students to have a 50% chance of obtaining a B or higher or about a 75% chance of obtaining a C or higher in corresponding credit-bearing first-year college courses. These college courses include English Composition I, College Algebra, introductory social science courses, and Biology. For STEM, the college courses include Calculus and a first year science course taken by students majoring in a STEM-related field, including Chemistry, Biology, Physics, or Engineering. The current ACT College Readiness Benchmarks are given in Table 1.

The ACT College Readiness Benchmarks can be used to determine the academic areas in which students are ready for college course work and areas in which they may need more work. Although the Benchmarks are useful predictors of success in first-year college courses, ACT scores above the cutoffs do not guarantee success. Factors other than academic preparedness, such as motivation and good study habits, are also important to success in college.

PreACT College Readiness Indicators

Because students' achievement is expected to grow between 10th and 11th grade, students who score below the ACT College Readiness Benchmarks on PreACT in grade 10 may still be on target to meet the benchmarks in grade 11. One way the PreACT can be used to evaluate student readiness is through the PreACT College Readiness Indicators. Comparing the student's PreACT scale score to the ranges in Table 1 categorizes the student into one of three readiness levels. These levels are defined as:

1. On Target—students in this range are estimated have a 50% or higher probability of meeting the ACT College Readiness Benchmark in 11th grade.
2. On the Cusp—these students have less than a 50% probability, but greater than approximately 25% probability, of meeting the ACT College Readiness Benchmark in 11th grade.
3. In need of intervention—these students have less than a 25% chance of meeting the ACT College Readiness Benchmark in 11th grade.

Table 1. Scale Score Ranges for PreACT College Readiness Indicators

	ACT Benchmark	In Need Range	On Cusp Range	On Target Range
English	*18*	*1-11*	*12-14*	*15-35*
Math	*22*	*1-16*	*17-18*	*19-35*
Reading	*22*	*1-16*	*17-19*	*20-35*
Science	*23*	*1-17*	*18-20*	*21-35*
STEM	*26*	*1-21*	*22-23*	*24-35*

When using the PreACT Readiness Indicators or the predicted ACT score ranges provided on the PreACT student score report, it is important to remember that these are statistical predictions based on typical student growth from grades 10 to 11. The predictions do not necessarily apply to students taking PreACT or the ACT in other grades. Also, improved study habits or taking more challenging courses may allow students to improve upon the predicted ACT scores. Additionally, prediction accuracy may be compromised for students who do not make a serious effort when taking the test. PreACT scores and readiness indicators should be viewed cautiously if there is reason to believe the student performed substantially below their achievement level on the PreACT.

Glossary of Terms

Abbreviations

— (dash)	Test not attempted, data not available
**	Test voided by administrator
Alg	Pre-Algebra/Algebra
COMP	Composite score—the average of the four PreACT test scores
CP	Cumulative Percent
Eng	English
For Lang	Foreign Language
Freq	Frequencies
Geom	Geometry
L or Local	School, district, or other group for which data is reported
Math	Mathematics
N (Summary Report)	Number of students
NA	Information not available
Nat Sci	Natural Sciences
Read	Reading
Sci	Science
SD	Standard deviation
Soc Std	Social Studies
Total N	Total number of examinees in group

General Terms

Core: A typical college-preparatory curriculum including a minimum number of years of study in the subject areas listed below. Similar preparation may be helpful to students entering other training or preparation programs after high school.

- English—4 years or more
- Mathematics—3 years or more
- Social Studies—3 years or more
- Natural Sciences—3 years or more

Statistical Terms

Mean (Average): The sum of a set of scores divided by the total number of scores.

N, N-Count: Number of students. Typically, this refers to the number of student records on which a particular table or data element is based.

Percent: The number of students who gave a certain response, or who obtained a certain scale score, divided by the total number of students, multiplied by 100.

Cumulative Percent (CP): A number used to describe the standing of an individual relative to a defined group. If a student with a score of 16 has a CP of 73, it means that 73% of the students in the norm group received a score of 16 or lower, or that the student scored the same as or better than 73% of the students in the norm group.

Standard Deviation (SD): The amount of variability (spread) of scores present in a specified group. The greater the spread in scores, the larger the standard deviation.

Scale Scores: Scores equated across test forms to adjust for differences in test difficulty and to ensure comparability of scores across different forms of the PreACT tests. An examinee's raw score is obtained by counting the number of items he/she answered correctly. The raw score is then converted to a scale score.

Appendix A

Integrating PreACT with the ACT

The experience of taking the PreACT tests, combined with the selection of rigorous high school courses, will help students perform their best when they take the ACT. For those students who will go from high school to a vocational school or directly into a career, PreACT provides information that will be useful in the selection of courses to be taken in their junior and senior years in preparation for their career of choice.

PreACT and the ACT have a common purpose—to support students at key decision points in their academic preparation and planning. The programs encourage students to plan and act for their goals and dreams—thus increasing their chances of succeeding in life. PreACT and the ACT also provide information helpful to educators guiding students through these important educational and career decisions.

The English, Mathematics, Reading, and Science tests in PreACT and the ACT programs are designed with developmentally articulated test specifications, ensuring that the content measured follows a logical developmental sequence across the high school experience. The programs also share common item formats and follow consistent reporting procedures.

Additionally, PreACT and the ACT share a common set of noncognitive components:

- a career interest inventory
- biographical data
- a student needs assessment
- high school course information

Despite having different upper score ranges, PreACT, with a range of 1–35, and the ACT, with a range of 1–36, are on approximately the same score scale. This allows comparison of a student's scores on the two assessment programs. A score increase from PreACT to the ACT can be interpreted as academic development within the limitations of measurement error.

PreACT contains four subject tests—English, math, reading, and science (see Figure 1 on page 12). These tests are designed to measure students' curriculum-related knowledge and the complex cognitive skills important for future education and careers. PreACT results provide students with information that can help them begin making plans for beyond high school.

The fundamental idea underlying the development and use of these tests is that the best way to determine how well prepared students are for further education and for work is to measure as directly as possible the knowledge and skills needed in those settings.

ACT conducted a detailed analysis of three sources of information to determine which knowledge and skills would be measured by PreACT: objectives for instruction in grades 7 through 12 (for all states with published objectives), textbooks on state-approved lists for courses in grades 7 through 12, and input from educators regarding the knowledge and skills taught in grades 7 through 12 that are prerequisite to successful performance in high school and later years. Information from these sources helped to define a scope and sequence for each of the areas measured by PreACT.

ACT periodically conducts the ACT National Curriculum Survey® to ensure the continued appropriateness of the content on PreACT and the ACT tests. In 2016, for example, ACT reviewed state educational standards from all 49 states that had published such standards. ACT also surveyed middle school and high school teachers and postsecondary entry-level-course faculty. The findings were summarized in ACT National Curriculum Survey 2016. The survey is the only one of its kind in the United States. Its results have a direct and significant impact on the development of the tests in PreACT and the ACT. This publication is available in PDF at **https://www.act.org/content/dam/act/unsecured/documents/NCS_Report_Web.pdf**.

ENGLISH TEST

(45 items, 30 minutes testing time)

Content/Skills Covered by Test	Number of Items
Production of Writing	*13–15*
Knowledge of Language	*6–8*
Conventions of Standard English	*23–25*
Total	*45*

MATHEMATICS TEST

(36 items, 40 minutes testing time)

Content/Skills Covered by Test	Number of Items
Preparing for Higher Math	*21*
Integrating Essential Skills	*15*
Total	*36*

Note: At least 10 of the 36 math items also belong to a reporting category called Modeling. The 21 items in the Preparing for Higher Math reporting category are divided among five subcategories: Number & Quantity (3), Algebra (5), Functions (5), Geometry (5), and Statistics & Probability (3).

READING TEST

(25 items, 30 minutes testing time)

Content/Skills Covered by Test	Number of Items
Key Ideas & Details	*13–15*
Craft & Structure	*7–9*
Integration of Knowledge & Ideas	*3–4*
Total	*25*

SCIENCE TEST

(30 items, 30 minutes testing time)

Content/Skills Covered by Test	Number of Items
Interpretation of Data	*11–13*
Scientific Investigation	*9–11*
Evaluation of Models, Inferences & Experimental Results	*7–9*
Total	*30*

Note: Four content areas (Earth/Space Sciences, Biology, Chemistry, and Physics) are represented in the Science Test. The content areas are distributed over the different formats in such a way that at least one unit, and no more than two units, represent each content area.

Total number of PreACT test items = 136
Total testing time for four tests = 130 minutes

Figure 1. PreACT Tests at a Glance

Other Key PreACT Components

- Predicted ACT Composite, subject test, and STEM score ranges—estimated ranges within which a student may be expected to score when taking the ACT in 11th grade
- Needs Assessment—highlights students' perceived needs for help
- High School Course/Grade Information—helps evaluate course-taking patterns in light of recommended core
- ACT Interest Inventory—helps students explore personally relevant education and career options
- Educational Opportunity Service (EOS)—links students with relevant college and scholarship information based on PreACT information

English Test

The PreACT English Test measures the student's understanding of the conventions of standard written English (punctuation, usage, and sentence structure) , production of writing (topic development, organization, unity, and cohesion), and knowledge of language (word choice, style, and tone). The test consists of three essays, or passages, each accompanied by a sequence of multiple-choice test questions. Different passage types are employed to provide a variety of rhetorical situations. Spelling, vocabulary, and rote recall of grammar rules are not tested.

Some items refer to underlined portions of the passage and offer several alternatives to the underlined portion. The student must decide which choice is most appropriate in the context of the passage. Some items ask about an underlined portion, a section of the passage, or the passage as a whole. The student must decide which choice best answers the question posed. Many items offer "NO CHANGE" to the passage as one of the choices.

Four scores are reported for the PreACT English Test: a total test score based on all 45 items, and three reporting categories and percentages based on specific knowledge and skills. The reporting categories are Conventions of Standard English, Production of Writing, and Knowledge of Language.

The three reporting categories cover six elements of effective writing: punctuation; usage; sentence structure and formation; topic development; organization, unity, and cohesion; and knowledge of language. These six elements are described briefly below.

Conventions of Standard English

Punctuation: Recognize common problems with standard English punctuation and make revisions to improve the writing.

Usage: Recognize common problems with standard English usage in a text and make revisions to improve the writing.

Sentence Structure and Formation: Apply understanding of sentence structure and formation in a text and make revisions to improve the writing.

Production of Writing

Topic Development: Demonstrate an understanding of, and control over, the rhetorical aspects of texts. Identify the purposes of parts of texts, determine whether a text or part of a text has met its intended goal, and evaluate the relevance of material in terms of a text's focus.

Organization, Unity, and Cohesion: Use various strategies to ensure that a text is logically organized, flows smoothly, and has an effective introduction and conclusion.

Knowledge of Language: Demonstrate effective language use through ensuring precision and concision in word choice and maintaining consistency in style and tone.

Mathematics Test

The PreACT Mathematics Test is designed to assess the mathematical skills students have typically acquired in courses taken up to the beginning of 12th grade. The material covered on the test emphasizes the major content areas that are prerequisites to successful performance in entry-level courses in college mathematics. The test requires use of quantitative reasoning skills to solve practical problems in mathematics. While students must demonstrate some computational skills and recall of basic formulas, extensive computation and recall of complex formulas will not be required.

The eight reporting categories for the mathematics test are described below.

Preparing for Higher Math: This category captures the more recent mathematics that students are learning, starting when students begin using algebra as a general way of expressing and solving equations. This category is divided into the following five subcategories.

- **Number & Quantity:** Demonstrate knowledge of real and complex number systems. Understand and reason with numerical quantities in many forms, including integer and rational exponents, and vectors and matrices.
- **Algebra:** Solve, graph, and model multiple types of expressions. Employ many different kinds of equations, including linear, polynomial, radical, and exponential relationships. Find solutions to systems of equations, even when represented by simple matrices, and apply knowledge to applications.
- **Functions:** Use knowledge of function definition, notation, representation, and application. Manipulate and translate functions, as well as find and apply important features of graphs. Function types include linear, radical, piecewise, polynomial, and logarithmic.

- **Geometry:** Define and apply knowledge of shapes and solids, such as congruence and similarity relationships or surface area and volume measurements. Understand composition of objects, and solve for missing values in triangles, circles, and other figures, including using trigonometric ratios and equations of conic sections.
- **Statistics & Probability:** Describe center and spread of distributions, apply and analyze data collection methods, understand and model relationships in bivariate data, and calculate probabilities, including the related sample spaces.

Integrating Essential Skills: This category addresses concepts typically learned before 8th grade, such as rates and percentages; proportional relationships; area, surface area, and volume; average and median; and expressing numbers in different ways. Students will solve problems of increasing complexity, combine skills in longer chains of steps, and apply skills in more varied contexts.

Modeling: This category represents all items that involve producing, interpreting, understanding, evaluating, and improving models. This category is an overall measure of how well students use modeling skills across mathematical topics. Not all test items are in this category, but those that are in this category are also counted in other appropriate reporting categories detailed above.

Each item in the Mathematics Test is classified with one of three levels of cognitive complexity modeled after Norman Webb's Depth of Knowledge (DOK) levels. Some of the characteristics associated with questions at the three levels of cognitive complexity are described below.

- **Level 1:** Directly using one or more facts, definitions, formulas, or simple procedures.
- **Level 2:** Using mental processing that goes beyond recalling or reproducing an answer. Students must make some decisions about how to approach a problem.
- **Level 3:** Explaining, justifying, using evidence, conjecturing, reasoning from a particular concept, drawing conclusions, or making inferences.

Students are permitted but not required to use calculators when taking this test. All of the items can be solved without a calculator. Students who use a calculator should use one with which they are most familiar. Please refer to the ACT Calculator Policy found at **www.act.org** for specific limitations on student calculator use.

Reading Test

The PreACT Reading Test measures the student's reading comprehension. The test questions ask students to derive meaning from three reading passages by (1) referring to what is explicitly stated and (2) reasoning to determine implicit meanings. Specifically, questions ask students to use referring and reasoning skills to determine main ideas; locate and interpret significant details; understand sequences of events; make comparisons; comprehend cause-effect relationships; determine the meaning of context-dependent words, phrases, and statements; draw generalizations; and analyze the author's or narrator's voice and method. The test includes a mix of literary narrative and informational passages that are representative of the levels and kinds of texts commonly encountered in 11th–12th grade and first-year college curricula. Each passage is preceded by a heading that identifies what type of passage it is (e.g., "Literary Narrative"), names the author, and may include a brief note that helps in understanding the passage. Each sections contains a set of multiple-choice test items. These items do not test the rote recall of facts for outside the passage, isolated vocabulary terms, or rules of formal logic.

Four scores are reported for the PreACT Reading Test: a total test score based on all 25 questions and three reporting category percentages based on specific knowledge and skills. The reporting categories are Key Ideas and Details, Craft and Structure, and Integration of Knowledge and Ideas.

Key Ideas and Details: Read texts closely to determine central ideas and themes. Summarize information and ideas accurately. Read closely to understand relationships and draw logical inferences and conclusions including understanding sequential, comparative, and cause-effect relationships.

Craft and Structure: Determine word and phrase meanings, analyze an author's word choice rhetorically, analyze text structure, understand authorial purpose and perspective, and analyze characters' points of view. Interpret authorial decisions rhetorically and differentiate between various perspectives and sources of information.

Integration of Knowledge and Ideas: Understand author's claims, differentiate between facts and opinions, and use evidence to make connections between different texts that are related by topic. Some questions will require students to analyze how authors construct arguments, evaluating reasoning and evidence from various sources.

Science Test

The PreACT Science Test measures scientific reasoning skills acquired in general introductory courses in the natural sciences. The test presents five sets of scientific information, each followed by a number of multiple-choice test items. The scientific information is conveyed in one of three different formats: data representation (graphs, tables, and other schematic forms), research summaries (descriptions and results of several related experiments), or conflicting viewpoints (expressions of several related hypotheses or views that are inconsistent with one another). The items require students to recognize and understand the basic features of, and concepts related to, the provided information; to examine critically the relationships between the information provided and the conclusions drawn or hypotheses developed; and to generalize from given information to gain new information, draw conclusions, or make predictions.

The PreACT Science Test is based on the type of content typically covered in early high school science courses. Materials are drawn from biology, chemistry, the Earth/space sciences, and physics. Advanced knowledge in these subjects is not required, but background knowledge that is typically covered in early high school general science courses is needed to answer some of the items. The test emphasizes scientific reasoning skills over recall of scientific content, skill in mathematics, or skill in reading. Students are not permitted to use calculators on the PreACT Science Test.

Appendix B

Career Exploration with PreACT

Administration of PreACT typically includes the ACT Interest Inventory. This inventory is intended for people in the early stages of career planning (such as high school students) where the primary purpose of interest assessment is to stimulate and facilitate exploration of self in relation to careers and provide a focus to career exploration. The focus is not on a single "right" occupation, but rather on a range of options that students may want to explore. In the process of exploration, students may discover things about educational and occupational options (as well as themselves) that they had not previously considered.

The ACT Interest Inventory assesses six types of interests paralleling the six occupational and interest types in Holland's (1997) well-known theory of careers. The inventory contains 12 items per scale and uses a three-choice response format (like, indifferent, dislike). Items emphasize work-relevant activities (e.g., build a picture frame, conduct a meeting, help settle an argument between friends) that are likely to be familiar to individuals, either through participation or observation. The validity of the inventory for its intended uses is well established (ACT, 2009). The six scale titles, corresponding Holland type (in parentheses), and example activities are as follows:

Science & Technology *(Investigative):* Investigating and attempting to understand phenomena in the natural sciences through reading, research, and discussion.

Arts *(Artistic):* Expressing oneself through activities such as painting, designing, singing, dancing, and writing; artistic appreciation of such activities (e.g., listening to music).

Social Service *(Social):* Helping, enlightening, or serving others through activities such as teaching, counseling, and working in service-oriented organizations.

Administration & Sales *(Enterprising):* Persuading, influencing, directing, or motivating others through activities such as sales, supervision, and aspects of business management.

Business Operations *(Conventional):* Developing and/or maintaining accurate and orderly files, records, etc.; designing and/or following systematic procedures for performing business activities.

Technical *(Realistic):* Working with tools, instruments, and mechanical or electrical equipment. Activities include designing, building, repairing machinery, and raising crops/animals.

Scores by themselves are of little use to students in career exploration—what is needed is a bridge from scores to occupational options. The ACT Career Map (Figure 2) provides a simple yet comprehensive overview of the world of work, as well as a visual means for linking ACT Interest Inventory scores to occupational options. Rather than mapping specific occupations, the ACT Career Map maps 26 "career areas" (groups of similar occupations). The career areas have easily understood titles (Marketing & Sales, Construction & Maintenance, etc.) drawn from the work world, and the occupations in a career area share similar work tasks, work settings, and purpose of work. In the early stages of career planning the use of career areas is particularly important, because groups of similar occupations can be considered before zeroing in on specific occupations. The 26 career areas are organized into 12 "regions" to facilitate the communication of interest results on the map.

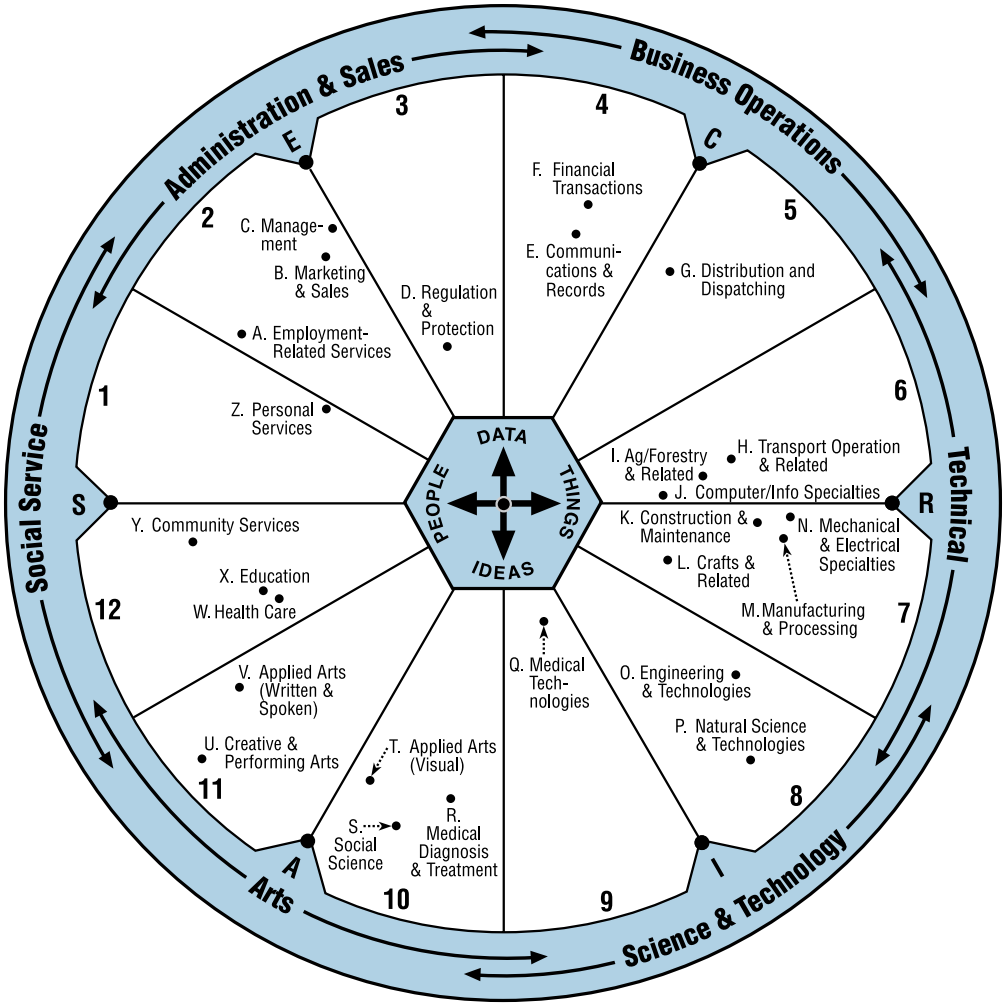

Figure 2. Career Map

The compass points on the map are basic work tasks: working with data, ideas, people, and things (see Figure 3). The map shows the locations of the 26 career areas with respect to their level of involvement with these four basic work tasks. Extensive research supports both the locations of the 26 career areas and the two dimensions, data/ideas and people/things, that underlie both occupations and interests (ACT, 2009). This means that interest inventory results can be expressed on these two dimensions, and can thus be visually represented on the map, permitting students to see occupations in line with their interests.

DATA/IDEAS DIMENSION	THINGS/PEOPLE DIMENSION
Data (facts, records, files, numbers). "Data activities" involve impersonal processes such as recording, verifying, transmitting, and organizing facts or data representing goods and services. Purchasing agents, accountants, and air traffic controllers work mainly with data.	**Things** (machines, mechanisms, materials, tools, physical and biological processes). "Things activities" involve non-personal processes such as producing, transporting, servicing, and repairing. Bricklayers, farmers, and engineers work mainly with things.
Ideas (abstractions, theories, knowledge, insights). "Ideas activities" involve intrapersonal processes such as discovering, interpreting, and creating new ways of expressing something for example, with words, equations, or music. Scientists, musicians, and philosophers work mainly with ideas.	**People** (no alternative terms). "People activities" involve interpersonal processes such as helping, informing, servicing, persuading, entertaining, motivating, and directing—in general, producing a change in human behavior. Teachers, salespersons, and nurses work mainly with people.

All occupations involve some work with data, ideas, things, and people. The examples listed above were chosen with an emphasis on the primary purpose or focus of the job activities. For example, a scientist may work with data, but the primary purpose is not to produce or handle data, rather it is to create or apply scientific knowledge. Likewise, an accountant may work with ideas, but the ultimate goal is not to create ideas, rather it is to organize, record, and verify data in a systematic manner.

Figure 3. Definitions of the Data/Ideas and Things/People Work Task Dimensions

PreACT Student Score Report

PreACT results that inform the career exploration process are found in two sections of the student score report: *Your Education and Career Journey* and *Your Interest-Career Fit*. Both sections provide students with personalized information that can be considered as students learn about education and career options.

Your Education and Career Journey

This section provides information that can help students identify their career-related interests and follow-up with career exploration at **www.act.org/collegeplanning**—a valuable source of free information on hundreds of college majors and occupations. In addition, this section reports information that can help students evaluate whether they are on track to meet their self-reported educational goals.

Your interests. If the student completed the ACT Interest Inventory the results are expressed as shaded regions of the Career Map. The career areas in line with the student's measured interests are found in those shaded areas. This information is designed to help students begin to consider the connections between their interests and occupations. Students can go to **www.act.org/collegeplanning** and explore occupations in those career areas, or in any of the 26 career areas.

On track? Students are asked to review a list of the 26 ACT career areas and select the one that contains "the jobs you think you would like best." If the student selected a career area, both that career area and the Profile for Success score range for that career area are reported. A Profile for Success is a range of typical ACT Composite scores of successful college students. (Success in college was defined as a GPA of 3.0 or higher at the completion of the freshman year.) The majors/programs of study of these successful students were assigned to one of the 26 ACT career areas, thus there is Profile for Success for each ACT career area. For example, the range of typical ACT Composite scores for successful students in majors related to career area C (Management) is 21–25, whereas the range for career area Q (Medical Technologies) is 24–28.

Students are instructed on the score report to compare their Predicted ACT Composite score range to the Profile for Success score range. If their Predicted ACT Composite score range overlaps or exceeds their Profile for Success, they are on track for college majors related to their career area preference. (For example, they are on track if their Predicted ACT Composite score range is 20–22 and their Profile for Success score range is 21–25.) If their Predicted ACT Composite score range falls short of their Profile for Success, it's a good time to learn more about the kinds of preparation needed for the occupation(s) they are considering. This is discussed in the Results Interpretation: Questions and Answers section below.

Your Interest-Career Fit

People tend to gravitate to occupations that align with their personal characteristics. For example, people with interpersonal skills, who enjoy talking to others and working indoors, and who value opportunities to influence others, are more likely to be found in sales or business management jobs. When certain types of occupations afford a person with many opportunities to engage in activities that are personally rewarding, we can say that such occupations are a good fit. Extensive evidence indicates that interest-career fit is related to performance, persistence, and satisfaction in work settings. Thus knowledge of interest-career fit can facilitate decisions about careers that are likely to be more personally rewarding.

If the student completed the interest inventory and chose one of the 26 career areas, this section of the student score report shows the level of fit between the student's interests and the kinds of work tasks that are typical of occupations in that career area. Fit is reported as one of three levels: low, medium, high. High fit means that the student's measured interests and career area preference are fully aligned, that is, the student prefers the types of basic work tasks that this career area is primarily involved in. In contrast, low fit means no alignment—the student prefers basic work tasks that this career area is minimally involved in. Medium fit indicates partial alignment.

Interpreting PreACT Results: Interest Inventory and Career Area Preference

A student's ACT Interest Inventory scores are used to locate the student on the Career Map. To facilitate exploration the student's location on the map is reported in terms of two or three map regions. Reported map regions reflect the pattern of the person's interest scores as expressed on the two worktask dimensions. For example, a high-ranking score for the Arts scale or the Science & Technology scale indicates an interest in ideas-related work tasks.

The procedure for converting ACT Interest Inventory results to Career Map locations typically results in a set of three adjacent map regions. However, when diverse interests are tied for highest, students may be referred to two nonadjacent regions.

Results Interpretation: Questions and Answers

Q: Why don't some students have Career Map region results?

A: There are two reasons why some students will not have Career Map regions reported on their student score report. First, when a student does not complete enough items for scoring, no interest results are reported. Second, when a student's interest score profile is undifferentiated ("flat") the center of the map ("Region 99") is shaded. Region 99 indicates that the student's scores do not show a clear pattern and no direction (regions) can be suggested at this time.

Q: How can we help students when their Predicted ACT Composite score range falls outside of their Profile for Success score range?

A: Remind the student that the Profile for Success lists the typical score range—some successful students score higher or lower than the Profile. Thus the student's Profile for Success is an approximate score range they can use to get a sense of whether they are on track in their preparation for college majors related to their career goals. Falling short can be an opportunity to encourage the student to look more closely at the occupations in their preferred career area and learn more about the kinds of preparation needed (types of courses, etc.). Students can find a wide range of information on hundreds of college majors, including examples of related high school courses, at **www.act.org/collegeplanning**.

Q: How can we help students with Region 99 results?

A: Some students may obtain a flat interest score profile because they have had a limited range of work-related experiences. Counselors may be able to help these students by suggesting how they can obtain experiences involving work-related activities.

Q: How can we help students with low interest-career fit?

A: Most students at this age are still in the early stages of career development and there is no reason to expect that their measured interests will agree with a tentative choice. Each provides a source of information and deserves attention. Nevertheless, expanding self knowledge now can help promote good-fit career decisions in the future. Encourage students to visit **www.act.org/collegeplanning** and learn more about the occupations suggested by their interests, abilities, and values.

Q: Why are some dots on the Career Map closer to the center than others?

A: Career area locations are primarily empirical and based on extensive data (ACT, 2009). Career areas closer to the edge of the map are characterized by their involvement with only one or two basic work tasks. For example, many occupations in Creative & Performing Arts have a lot of involvement with ideas and people, and relatively little involvement with data and things. So the location of this career area is "pulled" further out toward the edge of the map. Career areas closer to the center of the map contain occupations that involve a greater balance of data, ideas, people, and things work tasks.

Q: What is the relationship between the ACT career areas and the 16 national career clusters?

A: ACT has developed linkages between our 26 career areas to the 16 national career clusters. (See Figure 4).

ACT Career Areas	National Career Clusters
A. Employment-Related Services	Business Management & Administration
B. Marketing & Sales	Finance Marketing
C. Management	Business Management & Administration Government and Public Administration Hospitality & Tourism
D. Regulation & Protection	Law, Public Safety, Corrections & Security
E. Communications & Records	Business Management & Administration
F. Financial Transactions	Business Management & Administration Finance
G. Distribution & Dispatching	Transportation, Distribution & Logistics
H. Transport Operation & Related	Transportation, Distribution & Logistics
I. Agriculture, Forestry & Related	Agriculture, Food & Natural Resources
J. Computer & Information Specialties	Information Technology
K. Construction & Maintenance	Architecture & Construction
L. Crafts & Related	Hospitality & Tourism Manufacturing
M. Manufacturing & Processing	Manufacturing Transportation, Distribution & Logistics
N. Mechanical & Electrical Specialties	Manufacturing Transportation, Distribution & Logistics
O. Engineering & Technologies	Architecture & Construction Science, Technology, Engineering & Mathematics
P. Natural Science & Technologies	Agriculture, Food & Natural Resources Science, Technology, Engineering & Mathematics
Q. Medical Technologies	Health Science
R. Medical Diagnosis & Treatment	Health Science
S. Social Science	Science, Technology, Engineering & Mathematics Human Services
T. Applied Arts (Visual)	Arts, Audio/Video Technology & Communications
U. Creative & Performing Arts	Arts, Audio/Video Technology & Communications
V. Applied Arts (Written & Spoken)	Arts, Audio/Video Technology & Communications
W. Health Care	Health Science
X. Education	Education & Training
Y. Community Services	Human Services
Z. Personal Services	Hospitality & Tourism Human Services

Figure 4. Converting ACT Career Areas to 16 National Career Clusters

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